

From the INTERNATIONAL BUREAU

**PCT**NOTIFICATION CONCERNING  
TRANSMITTAL OF COPY OF INTERNATIONAL  
PRELIMINARY REPORT ON PATENTABILITY  
(CHAPTER I OF THE PATENT COOPERATION  
TREATY)

(PCT Rule 44bis.1(c))

To:

OKABE, Masao  
No. 602, Fuji Bldg.  
2-3, Marunouchi 3-chome  
Chiyoda-ku, Tokyo 1000005  
JAPON

Date of mailing (day/month/year) 16 November 2006 (16.11.2006)		
Applicant's or agent's file reference 10009226WO01		IMPORTANT NOTICE
International application No. PCT/JP2005/008467	International filing date (day/month/year) 27 April 2005 (27.04.2005)	
		Priority date (day/month/year) 06 May 2004 (06.05.2004)
Applicant CANON KABUSHIKI KAISHA et al		

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Facsimile No. +41 22 338 82 70

Authorized officer

Masashi Honda

e-mail: pt08@wipo.int

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 10009226WO01	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. PCT/JP2005/008467	International filing date ( <i>day/month/year</i> ) 27 April 2005 (27.04.2005)	Priority date ( <i>day/month/year</i> ) 06 May 2004 (06.05.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant CANON KABUSHIKI KAISHA		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).																								
2.	This REPORT consists of a total of 6 sheets, including this cover sheet.  In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 40%;">Box No. I</td> <td style="width: 50%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input checked="" type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
<input checked="" type="checkbox"/>	Box No. I	Basis of the report																							
<input type="checkbox"/>	Box No. II	Priority																							
<input checked="" type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability																							
<input type="checkbox"/>	Box No. IV	Lack of unity of invention																							
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																							
<input type="checkbox"/>	Box No. VI	Certain documents cited																							
<input type="checkbox"/>	Box No. VII	Certain defects in the international application																							
<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 338 82 70	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Date of issuance of this report 07 November 2006 (07.11.2006)</td> <td style="width: 50%;">Authorized officer  <b>Masashi Honda</b></td> </tr> <tr> <td colspan="2">e-mail: pt08@wipo.int</td> </tr> </table>	Date of issuance of this report 07 November 2006 (07.11.2006)	Authorized officer  <b>Masashi Honda</b>	e-mail: pt08@wipo.int	
Date of issuance of this report 07 November 2006 (07.11.2006)	Authorized officer  <b>Masashi Honda</b>				
e-mail: pt08@wipo.int					

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

REC'D 25 AUG 2005	
WIPO	PCT

To:  
OKABE, Masao

No. 602, Fuji  
Bldg., 2-3, Marunouchi  
3-chome, Chiyoda-ku, Tokyo  
1000005 Japan

## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing (day/month/year)	23. 8. 2005
-------------------------------------	-------------

Applicant's or agent's file reference  
10009226WO01

**FOR FURTHER ACTION**

See paragraph 2 below

International application No. PCT/JP2005/008467	International filing date (day/month/year) 27.04.2005	Priority date (day/month/year) 06.05.2004
--	--	--

International Patent Classification (IPC) or both national classification and IPC  
Int.Cl.<sup>7</sup> H01L27/146, H04N5/335

Applicant  
CANON KABUSHIKI KAISHA

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Date of completion of this opinion		05.08.2005	
Name and mailing address of the ISA/JP  <p style="text-align: center;"><b>Japan Patent Office</b></p> 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	Authorized officer  <p style="text-align: center;">Haruka ONDA</p> Telephone No. +81-3-3581-1101 Ext. 3498	4L	8 9 3 4

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/008467

Box No. I      Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☒ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☒ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments: ,

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/008467

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 1

because:

☐ the said international application, or the said claims Nos. \_\_\_\_\_  
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (indicate particular elements below) or said claims Nos. 1  
are so unclear that no meaningful opinion could be formed (*specify*):

Claim 1 is not clear. The last paragraph "wherein the impurity concentration of said first semiconductor region is higher than the impurity concentration of said second semiconductor region" is not clear because a second semiconductor region is only specified by the type of the conductivity.

☐ the claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported  
by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. \_\_\_\_\_.

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form ☐ has not been furnished  
☐ does not comply with the standard

the computer readable form ☐ has not been furnished  
☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions in that the computer readable form:

☐ has not been furnished  
☐ does not comply with the technical requirements

☐ See Supplemental Box for further details.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/008467

**Box No. V** Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2-6	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	2-6	NO
Industrial applicability (IA)	Claims	2-6	YES
	Claims		NO

2. Citations and explanations

D1: US 2002/0036303 A1 (Hiroaki Ohkubo) 2002.03.28

D2: US 2002/0024071 A1 (INNOTECH Corporation) 2002.02.28

D3: JP 1-243462 A (Hitachi, Ltd.) 1989.09.28

D4: JP 8-213582 A (SONY Corporation) 1996.08.20

D5: JP 4-284625 A (Fujitsu Limited) 1992.10.09

D6: JP 2005-191362 A (SEIKO EPSON Corporation) 2005.7.14

The technical feature [wherein said first and third semiconductor regions comprise impurity concentration peaks] is not disclosed in D1. However, the P well 5 and deep well 6 are disclosed in D1 and these wells comprise impurity concentration peaks if they are formed by using ion implantation, which is commonly used. Therefore the person skilled in the art would easily conceive the idea of employing the feature [wherein said first and third semiconductor regions comprise impurity concentration peaks].

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2005/008467

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

(1) Claim 1 is not clear. The last paragraph "wherein the impurity concentration of said first semiconductor region is higher than the impurity concentration of said second semiconductor region" is not clear because a second semiconductor region is only specified by the type of the conductivity.

(2) Claims 2 to 6 are not clear because a second semiconductor region is only specified by the type of the conductivity.

(3) The peak impurity concentration of said third semiconductor region of claim 3 is not referred to in the description concretely. Therefore, claim 3 is not supported by the description as required by Article 6 PCT.